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EXAMINER

LAZORCIK, JASON L

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/619,181	Applicant(s) TAKAHASHI ET AL.	
	Examiner JASON L. LAZORCIK	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7,8,12-17 and 20-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 7,8,12-17 and 20-28 is/are rejected.
- 7) ☐ Claim(s) 22 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/5/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 5, 2009 has been entered.

Status of the Claims

Applicants reply dated March 5, 2009 amends claims 7, 8, 12, 13, 17, 26, 28. No new claims have been added and no previously pending claims have been cancelled by virtue of the instant amendment.

Claim 7, lines 5-6 has been amended to recite a precision polishing step for the main surface and a cleaning step on the main surface.

Claim 7, lines 11-13, Claim 12, lines 8-9, Claim 26, lines 9-10 have been amended to recite the new limitation wherein the cleaning step is carried out after the precision polishing step and the flatness of the main surface is 1 micron or less. The instant limitation appears to find support in the originally filed Specification ¶[0162] and ¶[0167].

Claim 7, lines 15-16, Claim 12, lines 10-11, Claim 26, lines 5-6, Claim 28, lines 5-6 has been amended to recite the new limitation wherein the etching of the main surface

Art Unit: 1791

removes "between 0.01-0.20 microns of glass from the main surface" and that the etching "increases a size of the defect". The instant limitation Appears to find support in ¶[0091], ¶[0106], ¶[0122].

Claim 28, line 7 has been amended to recite that etching of the main surface "increases a size of the defect ... to width of 0.2 microns or more". The instant limitation appears to find support in the originally filed Specification, ¶[0122].

Claim 8, line 4, Claim 13, lines 3-4 has been amended to recite the limitation such that the cleaning step removes no more than 0.01 microns of glass material. The instant limitation does not appear to find support in the Specification as originally filed for reasons set forth in the rejection of claims under 35 U.S.C. §112, first paragraph below.

In summary, claims 1-6, 9-11, and 18-19 have been cancelled by Applicant.

Therefore, Claims 7-8, 12-17, 20-28 are pending for prosecution on the merits.

Claim Objections

2. Claims 22 and 23 are objected to because of the following informalities: Each of claims 22 and 23 recite the limitation of "a mask of producing a glass substrate for a mask blank according to claim 12" in the respective claim preamble. It would appear evident to the Examiner that Applicant intended to recite "a method of producing..." rather than "a mask of producing..." as presently recited and that the present claim language constitutes an inadvertent typographical error. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. **Claim 8** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 8, line 4, Claim 13, lines 3-4 has been amended to recite the limitation such that the cleaning step “removes no more than 0.01 microns of glass material”. Applicants originally filed Specification (see for example ¶[0046], ¶[0101], and ¶[0127]) however recites that “the cleaning step is carried out under a condition that causes the glass substrate to be removed by more than 0 microns and below 0.01 microns by etching”. Applicants recited limitation includes removal of 0 microns of material during the cleaning step while every instance of this feature in the Specification clearly requires that “more than 0 microns” of material is removed. It therefore follows that the Specification as originally filed does not provide supporting basis for the instant claim language.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1791

6. **Claim 28** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 28 recites the limitation "the defect that is located in a position deeper than the predetermined polishing -off amount and that is elicited by the etching step and remains after the precision polishing step" in lines 14-16. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims **7, 8, 12-17, and 20-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker (US 2,372,536) in view of Feng (US 6,596,042 B1) and Hagihara (US 2001/0051746 A1).

(I). Walker (US 2,372,536):

Walker teaches an improved method for preparing precision polished glass surfaces. The reference teaches that the method is applicable to the formation of highly polished optical lens, prisms, flats or other like glass objects which, in the absence of evidence to the contrary, are understood to display a “flatness” sufficient for use with one of the claimed source lasers or EUV [**Claims 20, 21**].

In accordance with the Walker disclosure and with particular regard to **Claims 7 and 12**, a glass substrate is first subjected to a rough grinding process. The reference teaches that after the rough grinding “it is extremely difficult to properly inspect a stock piece for the presence of relatively deep scratches or marring or internal inclusions or striae or other imperfections” (pg 2, Column 2, Lines 46-74).

The inventors then subject the substrate to immersion in a reactive chemical agent or etching solution which removes the surface debris and rounds off the edges of the workpiece. Walker discloses that after the etching treatment, “any relatively deep surface scratches or other mars will now be readily discernible”. Since this chemical etching reaction acts upon “all surface portions”, the solution is understood to provide an isotropic etch of the substrate [**Claim 23**]. It is therefore understood that surface defects are “elicited” through etching process which visually magnifies the surface defect during an inspection of the surface.

The thus etched substrate is further subject to a fine polishing or precision polishing (Page 3, Column 2, Lines 45-46). After said precision polishing, the substrate

Art Unit: 1791

is optionally subjected to a final dip or “cleaning step” in an etchant solution or chemical debris-clearing solution (Page5, Lines 17-38) [**Claim 8, 13**]

Walker teaches that etch rate of the etchant or cleaning solutions may be controlled by tailoring the ratio of solution constituent hydrofluoric and sulfuric acids, the substrate immersion time, and the bath temperature (Page 3, Column 1, line 44 through Column 2, line 26). The Walker reference is silent regarding a particular limitation upon the amount of material removed from either the etching step or the final cleaning step as set forth in Claims 15 and 17, respectively, or upon the etch rate of the etching step as per claims 24 and 25. Specifically regarding Applicants amended claim language, Walker is silent regarding 1) the limitation wherein etching of the main surface removes “between 0.01-0.20 microns of glass from the main surface” as recited in Claim 7, lines 15-16, Claim 12, lines 10-11, Claim 26, lines 5-6, Claim 28, lines 5-6, 2) the limitation wherein etching of the main surface “increases a size of the defect ... to width of 0.2 microns or more” as recited in Claim 28, line 7, or 3) the limitation wherein the cleaning step removes no more than 0.01 microns of glass material as recited in Claim 8, line 4, Claim 13, lines 3-4.

Finally, Walker is silent on the nature of the abrasive utilized in the polishing procedures as required in claim 22 or upon the root mean square roughness of the in final optical element as per claim 14. And, Walker is silent regarding the particular limitation wherein “the flatness of the main surface is 1 micron or less” as recited in Claim 7, lines 11-13, Claim 12, lines 8-9, Claim 26, lines 9-10.

Regarding the etched material tolerances as recited in Claims 15, 24, 25 and the above noted amended claim language of Claims 7, 8, 12, 26, 28, Walker teaches that the factors affecting etch rate and etch depth, such as etchant concentration, immersion time, and bath temperature, are subject to routine experimentation and optimization. It follows, absent any evidence showing substantially unexpected results, that one of ordinary skill in the art at the time of the invention would have arrived at the claimed etch rates and/or etch depths through no more than routine optimization of the disclosed process.

With respect to **Claims 15** and newly submitted **Claims 24 and 25**, it would have been well within the purview of one of ordinary skill in the art at the time of the invention to provide a cleaning step etch of between 0 to 10nm depth [**Claim 15**] and to likewise control the etch rate to within the claimed ranges of between 0.2nm/min and 2 nm/min [**Claims 24 and 25**]. Similarly, where the factors affecting etch rate and etch depth are well established in the art, Applicants recited etch depths for the etchant solution and cleaning solution would have reasonably been derived through no more than routine experimentation and optimization of the prior art process

(II.) Feng (US 6,596,042 B1):

Next, the reference to Feng (US 6,596,042 B1) teaches common techniques, materials, and tolerances considered to be known to skilled practitioners in the field of precision polishing or Chemical-Mechanical polishing (CMP). First, the reference

Art Unit: 1791

teaches that known slurry formulations comprising silica or ceric oxide are have been developed with ceric oxide being recognized as the most efficient abrasive towards silicon dioxide (e.g. glass) (Column 1, lines 23-33). The reference in Example 4 (Column 5, lines 3-33) further teaches that RMS roughness values of less than 1 angstrom and silica removal rates of less than 85 angstroms/minute are achievable by precision polishing with slurries of silica and/or cerium oxide [**Claim 27**].

In light of the Feng disclosure and absent any compelling or unexpected results to the contrary, it is the Examiners position that precision polishing operations which use colloidal silica and/or cerium oxide abrasive particles [**Claim 22**] and which remove between 10 and 200nm of silica [**Claim 17**] to yield a surface RMS value of 0.2nm [**Claim 14**] are well within the prevue of one of ordinary skill in the art.

(III.) Hagihara (US 2001/0051746 A1)

The reference to Hagihara relates a method for precision polishing a substrate which provides a minimum "roll-off" (edge rounding of end sides of the substrate) in the polishing process. It is understood by the Examiner that the process termed as "roll-off" in the instant reference is essentially equivalent to applicants claimed "amount of a turned-down edge" of a substrate.

Hagihara discloses that reducing roll-off in glass hard drive substrates is a recognized goal in glass hard drive substrate manufacturing since decreasing roll-off increases data recording area and subsequently leads to higher hard drive capacities. The reference explicitly teaches that various methods are known which can reduce this

Art Unit: 1791

roll-off effect, "such as making a polishing pad more rigid, and making a polishing load smaller (Page 1, ¶[0004]). The reference continues by disclosing a particular polishing agent which results in a roll off value of "0.2 $\mu\text{m}/\mu\text{m}$ or less, more preferably 0.15 $\mu\text{m}/\mu\text{m}$ or less, still more preferably 0.10 $\mu\text{m}/\mu\text{m}$ or less". It follows from the Hagihara disclosure that the claimed "turned-down edge" tolerances would be recognized as conventional by one of ordinary skill in the art at the time of the invention. Said claimed ranges would have been achieved through no more than routine experimentation and optimization by a skilled artisan seeking to fabricate a precision polished HD substrate according to the Walker method.

(IV.) Brown (US 6,541,168)

The reference to Brown relates to a method for fabricating highly planar and defect free glass bodies suitable for use as optical elements (col. 2, lines 64-66). Of particular relevance to the instant Application, Brown discloses that rough cut glass blanks may be subject to a variety of surface finishing procedures including , inter alia, chemical mechanical polishing, flatness lapping, and flatness polishing to achieve a desired surface finish. Brown notes that the final finish may achieve "a super polish below 5 angstroms finish and flatness".

In view of the brown reference it would appear that Applicants claimed substrate flatness tolerance of "1 micron or less" as recited in Claim 7, lines 11-13, Claim 12, lines 8-9, Claim 26, lines 9-10 would be viewed as conventional by one of ordinary skill in the art at the time of the invention. Said claimed ranges would have been achieved through

Art Unit: 1791

no more than routine experimentation and optimization by a skilled artisan seeking to fabricate a precision polished substrate according to the Walker method.

Claims 7 and 12 require in part that the etching step is carried out “on the condition that a polishing-off amount is reduced in the precision polishing step and subsequently so that a “turned-down edge” falls within the stated range after said precision polishing. A similar limitation is presented in Applicants newly presented **claim 26**, wherein it is set forth that the etching is executed in under such conditions that defects are magnified and the polishing-off amount is reduced during the precision polishing step. Finally, newly presented **claim 28** requires the previously addressed rough polishing, etching, precision polishing and inspecting steps. Claim 28 further apparently requires that the inspecting step requires a comparison between a predetermined polishing-off amount and the depth of the defect elicited by the inspection step.

To summarize the aforementioned limitations from claims 7,12, 26, and 28, it is the Examiners understanding According to the claimed invention that the etching step is carried out in order to “polish-off” enough material to eliminate the surface defect while minimize the total amount of material removed during the precision polishing step. The Walker reference speaks directly to this issue noting that;

“In every case it has been found that the employment of one or more of such clearing operations invariably reduces the total amount of grinding and/or polishing

Art Unit: 1791

and/or other finishing operations which may be required to provide the perfectly finished final product” (page 5, left column, lines 27-33). “Thus, an accurate guide is furnished for the fine grinding process because it will be apparent that until such time as all of the bright points are eliminated the fine grinding reduction process must be continued to obtain accurate leveling of the surface and elimination of any relatively deep scratches or gouge marks which were made by the coarse grinding operation.”

In short, the Walker defect eliciting process decreases the amount of material required for removal during the “polishing-off” step necessary to achieve a perfectly finished final product. Walker further teaches that the elicited defects provide a visual guide or assessment regarding the precise amount of material required to eliminate the surface defects. Where the goal of Walker is to eliminate the elicited defect from the substrate surface, Walker, in essence, implicitly teaches a comparison between the depth of the elicited defect and the amount of material removed by the precision polishing step. Minor modifications to the Walker disclosed process not explicitly covered by the eliciting and precision polishing steps would have represented obvious extensions over the prior art teachings absent compelling evidence to the contrary.

In summary, the cited prior art references to Walker, Feng, Hagihara, and Brown all relate to fabrication of highly planar and defect free glass substrates such as may be found for example in the glass hard drive or precision optics substrate manufacturing arts.

Walker teaches essentially every element of applicants claimed method including the steps of 1) rough polishing a main surface of a glass substrate, 2) eliciting defects or cracks in the main surface by immersing the substrate in an etching solution, and 3) subsequently subjecting the substrate to a precision polishing step. Walker further teaches that the factors affecting etch rate and etch depth, such as etchant concentration, immersion time, and bath temperature, are subject to routine experimentation and optimization. Walker also instructs that the eliciting step reduces the amount of precision polishing and further reduces the "polishing-off" amount required to remove surface defects.

Feng relates common abrasive materials for use in surface precision polishing operations and also teaches process tolerances (e.g. substrate root mean square roughness values (RMS) and substrate material removal depths) which are deemed conventional at the time of the invention. Similarly, Hagihara teaches that the effects of "edge roll-off", (e.g. the "amount of a turned-down edge" of a substrate) was appreciated by practitioners in the art. Hagihara further demonstrates that the claimed "turned-down edge" tolerances would be viewed as merely routine. Likewise, Brown teaches that Applicants recited surface roughness and substrate flatness values would be viewed as within conventionally achievable tolerances by one of ordinary skill in the art of precision polished glass substrates.

Response to Arguments

Art Unit: 1791

8. Applicant's arguments, see page 8, filed March 5, 2009, with respect to the rejection of Claim 28 under 35 U.S.C. §112, first paragraph have been fully considered and are persuasive. The noted rejection of claim 28 has been withdrawn.

Regarding the rejection of claims under 35 U.S.C. 103(a) over Walker, Feng and Hagihara, Applicant presents the following arguments.

Argument #1)

9. Applicant alleges that since the Walker patent was issued in 1945, said reference represents old glass processing technology and could not have the precision needed for production of mask blank substrates of today.

10. In response to applicant's argument based upon the age of the references, contentions that the reference patents are old are not impressive absent a showing that the art tried and failed to solve the same problem notwithstanding its presumed knowledge of the references. See *In re Wright*, 569 F.2d 1124, 193 USPQ 332 (CCPA 1977).

Argument #2)

Applicant acknowledges that Walker makes scratches in the surface of the substrate "readily discernable" but alleges that Walker does not rely upon the etching process to widen the scratches.

Art Unit: 1791

In response, Applicant was previously advised that Walker teaches that the etching reaction acts upon "all surface portions" and would therefore be construed to provide an isotropic etch of all surfaces of the substrate surface. Such an etchant which works upon all surface portions would reasonably be expected widen cracks on the surface, absent compelling evidence to the contrary.

Argument #3

Applicant alleges that the Walker patent primarily teaches the manufacture of curved lenses and therefore would not be applicable to flat substrates.

With respect to this matter, Applicant was explicitly advised that Walker contemplates application of the disclosed precision glass polishing process to "prisms, flats or other like glass objects". It follows that Applicants allegation that Walker is not applicable to flat substrates runs counter to the alternate embodiments explicitly contemplated in the reference.

Argument #4)

Applicant alleges that routine experimentation and optimization of the Walker disclosed process would not yield "mask blank technology". Applicant continues by alleging that glass substrates for use as a mask in the manufacture of electronic devices demand exceptionally high quality.

11. In response, Applicant is advised that the termed "mask blank" as recited in preamble of the claimed invention carries neither inherent structure nor inherent

Art Unit: 1791

physical properties. Applicant merely argues that production of mask blanks are more technically challenging and more precise than the product of the Walker process, however Applicant never presents any reasoned basis to demonstrate or even suggest that the limitations of the claim language are in any manner distinguished over the prior art. It follows that Applicant's arguments on this matter do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

12. Further, Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Argument #5)

Applicant alleges that "based upon the vintage of the teachings", the substrate resulting from the etching process would not be compatible for electronic device manufacture. Applicant further alleges that the Walker etchants, "as understood according to the practices of the conventional substrate production arts", would result in undesirable surface roughening, undesirably rounded edges, and would exclude the use of the Walker reference for production of high quality substrates. Finally, Applicant

Art Unit: 1791

alleges that the cleaning treatment as taught by walker in 1945 would not be able to produce the high quality surface with the recited flatness

Each of Applicants above arguments has been considered but is deemed to be completely unsupported by any evidence on the record. Since Applicant has provided no conclusive evidence in support of the instant allegations, it follows that said allegations are held to be mere conjecture and attorney argument.

The Official policy regarding Attorney argument is clearly outlined in MPEP §2145 [R-3];

“Attorney argument is not evidence unless it is an admission, in which case, an examiner may use the admission in making a rejection. See MPEP § 2129 and § 2144.03 for a discussion of admissions as prior art. The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) (“An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness.”). See MPEP § 716.01(c) for examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration.

Argument #6)

Applicant acknowledges that Hagihara indicates that the teachings of the reference are applicable to substrate materials such as glass and ceramic, however

Art Unit: 1791

Applicant argues that "the teachings of Hagihara are focused on metal substrates for disks and... would not lead one skilled in the art to consider applying the teachings of Hagihara" which reference is directed to glass substrates.

Where Haighara explicitly contemplates application of the instant teachings to glass substrates, it should appear self-evident that one of ordinary skill in the art would reasonably consider applying said teachings to a glass substrate.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON L. LAZORCIK whose telephone number is (571)272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1791

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason L Lazorcik/
Examiner, Art Unit 1791